

AMENDMENTS TO THE CLAIMS

This listing of claims will replace the prior version and listing of claims in the

English translation submitted herewith:

LISTING OF CLAIMS:

1. (currently amended): An illumination~~illumination~~ system for a microlithographic projection exposure apparatus, comprising:

a) a light source ~~(12)~~ for generating a projection light beam, and

~~b) a first objective (20) and~~

~~b) e)~~ a masking system ~~(38, 52)~~ for masking a reticle ~~(30)~~, said masking system including

i) adjustable first blades ~~(40)~~ for masking in a first ~~spatial~~ direction ~~(X)~~, wherein the first blades are arranged in or in close proximity to a first field plane ~~(36)~~, and

ii) adjustable second blades ~~(54, 56)~~ for masking in a second ~~spatial~~ direction ~~(Y)~~, wherein the second blades are arranged in or in close proximity of a second field plane ~~(44)~~ which is different from the first field plane ~~(36)~~.

PRELIMINARY AMENDMENT

Attorney Docket No.: Q92121

Page 9

2. (currently amended): The illumination~~illumination~~ system ~~of as claimed in claim 1, further comprising:~~

a) wherein the a first objective, which ~~(20)~~ images a first optical raster element ~~(16)~~ ~~arranged before the first objective (20) in the beam propagation direction~~ on the first field plane ~~(36)~~, and

b) wherein the illumination system (10) further includes a second objective, which is (42) ~~arranged behind the first objective (20) in the beam propagation direction, which second objective (42) and~~ images the first field plane ~~(36)~~ on the second field plane ~~(44)~~.

3. (currently amended): The illumination~~illumination~~ system ~~of as claimed in claim 2, further comprising:~~

a) wherein a second optical raster element, (28) which expands a transiting light beam exclusively in the first ~~spatial~~ direction ~~(X)~~ and which is arranged in the first objective ~~(20)~~, and

b) wherein a third optical raster element (48) which expands a transiting light beam exclusively in the second ~~spatial~~ direction ~~(Y)~~ and which is arranged in the second objective ~~(42)~~.

4. (currently amended): The illumination~~illumination~~ system ~~of as claimed in claim 3, wherein the second optical raster element (28) is arranged close to~~ a the pupil plane within the first objective, and wherein (20) ~~and the third optical raster element (48) is arranged close to~~ a the pupil plane ~~of within~~ the second objective ~~(42)~~.

PRELIMINARY AMENDMENT

Attorney Docket No.: Q92121

Page 10

5. (currently amended): The illumination~~illumination~~ system of claim 1~~as claimed in any one of the preceding claims~~, wherein, ~~by means of~~ the first blades (40) and the second blades (54, 56), define a substantially strip-shaped light field (32) on the reticle, said light field having an ~~the~~ extension of which is ~~shorter~~ in the first ~~spatial~~ direction (X) which is shorter than an extension in the second ~~spatial~~ direction (Y), is definable ~~on the reticle (30).~~

6. (currently amended): The illumination~~illumination~~ system of claim 1~~as claimed in any one of the preceding claims~~, further comprising~~wherein~~ an attenuation system (60) for locally variable attenuation of the light intensity, wherein said attenuation system is arranged in the second field plane ~~(44).~~

7. (currently amended): The illumination~~illumination~~ system of claim 2~~as claimed in any one of the preceding claims~~, wherein the first objective (20) and the second objective (42) are configured so designed that a ~~the~~ light field illuminated in the first field plane (36) is smaller than a ~~the~~ light field illuminated in the second field plane ~~(44).~~

8. (currently amended): The illumination~~illumination~~ system of claim 2~~as claimed in any one of the preceding claims~~, further comprising~~wherein~~ a manipulator (50) arranged in the second objective for manipulating the ~~a~~ pupil of ~~is arranged in the second objective (42).~~

PRELIMINARY AMENDMENT

Attorney Docket No.: Q92121

Page 11

9. (currently amended): The illumination~~illumination~~ system of claim 2~~as claimed in any one of the preceding claims~~, wherein the first objective is a zoom-axicon objective ~~(20)~~ having two axicon lenses ~~(22, 24)~~ which are adjustable relative to one another.

10. (currently amended): The illumination~~illumination~~ system of claim 2~~as claimed in any one of the preceding claims~~, wherein ~~the illumination system (10) includes~~further comprising a third objective ~~(58)~~ which images the second field plane ~~(44)~~ on a third field plane in which the reticle ~~(30)~~ is arranged.

11. (currently amended): A microlithographic~~Microlithographic~~ projection exposure apparatus for imaging structures contained in a movably arranged reticle ~~(30)~~ on a light-sensitive layer ~~(124)~~, comprising a transmission filter ~~(162)~~ having a locally varying transmissivity and being movable synchronously with movements of the reticle ~~(30)~~.

12. (currently amended): The~~Projection exposure~~ apparatus of~~as claimed in claim 11, wherein the projection exposure apparatus (100) further comprises~~comprising:

- a) an illumination system ~~(110)~~ for generating a projection light beam, which illumination system ~~(110)~~ contains a light source ~~(12)~~ and an imaging optical system ~~(58)~~,
- b) a first traversing system ~~(118)~~ for moving the reticle ~~(30)~~ in an image plane ~~(116)~~ of the optical system ~~(58)~~,

PRELIMINARY AMENDMENT

Attorney Docket No.: Q92121

Page 12

- c) a projection lens ~~(112)~~ for imaging ~~the~~ structures contained in the reticle ~~(30)~~ on a ~~the~~ light-sensitive layer ~~(124)~~,
- d) a second traversing system ~~(128)~~ for moving a support carrier ~~(126)~~ of the light-sensitive layer ~~(124)~~,
- e) a third traversing system ~~(164)~~ for moving the transmission filter ~~(162)~~ into or close to a field plane ~~(44)~~ of the optical system, wherein said field plane is optically ~~(58)~~ conjugate to the image plane ~~(116)~~,
- f) a control system ~~(130)~~ ~~for the traversing systems~~ ~~(118, 128, 164)~~ for controlling the traversing systems ~~(118, 128, 164)~~ in such a way that the reticle ~~(30)~~, the support ~~(126)~~ and the transmission filter ~~(162)~~ move synchronously.

13. (currently amended): The Projection exposure apparatus of ~~as claimed in claim 11 or 12, wherein a one to one correspondence is provided between to each point on the transmission filter (162) and precisely one each point on the reticle (30) is coordinated, and wherein, conversely, to each point on the reticle (30) precisely one point on the transmission filter (162) is coordinated.~~

14. (currently amended): The Projection exposure apparatus of ~~claim 11 as claimed in any one of claims 11 to 13, wherein the distribution of the transmissivity over a surface of the transmission filter has a transmissivity distribution over its surface which is configured such~~ ~~(162) exposed to projection~~

PRELIMINARY AMENDMENT

Attorney Docket No.: Q92121

Page 13

~~light is so defined that, at least approximately, the same light energy per unit area impinges on each exposed point on the light-sensitive layer (124) which is subjected to projection light as a result of the projection of the reticle (30).~~

15. (currently amended): ~~A method~~Method for ~~homogenizing~~homogenising the light energy which impinges per unit area on a light-sensitive surface ~~(124)~~ in a microlithographic projection exposure apparatus ~~(100)~~, wherein ~~the~~which light-sensitive surface is configured to (124) ~~can be~~ arranged in an image plane ~~(122)~~ of a projection lens ~~(112)~~ of the projection exposure apparatus ~~(100)~~, said method comprising ~~the following steps:~~

- a) arrangement of a light-sensitive element ~~(124)~~ in the image plane ~~(122)~~;
- b) projection of a reticle ~~(30)~~ on the light-sensitive element ~~(124)~~ under the conditions under which microstructured components are to be manufactured using the reticle ~~(30)~~, in a scanning process in which the light-sensitive element ~~(124)~~ is moved synchronously with the reticle ~~(30)~~;
- c) locally-resolved determination of the light energy impinging on the light-sensitive element ~~(124)~~ per unit area;
- d) determination of the smallest value of light energy which has been detected in step b) for a point to be exposed on the light-sensitive element ~~(124)~~;

PRELIMINARY AMENDMENT

Attorney Docket No.: Q92121

Page 14

e) provision of a traversing system ~~(164)~~ for moving a transmission filter having a ~~(162)~~ with locally varying transmissivity, ~~with which traversing system (164) the transmission filter (162) can be moved~~ synchronously with traversing movements of the reticle ~~(30)~~;

f) determination of the local distribution of the transmissivity of the transmission filter ~~(162)~~ ~~in such a way that~~, during a further projection in which the transmission filter ~~(162)~~ is moved synchronously with the reticle ~~(30)~~, the smallest value for the light energy impinging per unit area determined in step c) is at least approximately achieved at all points to be exposed on a light-sensitive layer ~~(124)~~ arranged in the image plane ~~(122)~~.

16. (currently amended): The method of ~~Method as claimed in~~ claim 15, wherein the light-sensitive element is a measuring sensor.

17. (currently amended): The method of ~~Method as claimed in~~ claim 15, wherein the light-sensitive element is a light-sensitive photoresist.

18. (currently amended): An illumination ~~Illumination~~ system for a microlithographic projection exposure apparatus comprising:

a) a light source ~~(12)~~,

PRELIMINARY AMENDMENT

Attorney Docket No.: Q92121

Page 15

- b) a first objective ~~(20)~~ that has a first pupil plane ~~(26)~~ and includes two axicon lenses ~~(22, 24)~~ which ~~can be displaced~~ are configured to displace relative to each other,
- c) a first optical raster element ~~(16)~~ which is arranged in an object plane ~~(18)~~ of the first objective ~~(20)~~,
- d) a second objective ~~(28)~~ arranged in the optical path behind first objective ~~(20)~~ and imaging the first pupil plane ~~(26)~~ onto a second pupil plane ~~(30)~~, and
- e) a second optical raster element ~~(32)~~ arranged in the second pupil plane ~~(30)~~.

19. (currently amended): The illumination ~~illumination~~ system of ~~as claimed in~~ claim 18, wherein the second objective ~~(28)~~ has a magnification between approximately ~~about~~ 0.5 and approximately 2.